

AUG 16 2007

Appl. No. 10/508,924
Amdt. Dated August 14, 2007
Reply to Final Office Action of May 16, 2007

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. - 8. (Canceled)

9. (Previously Presented) A nonvolatile magnetic memory device of the type having:

- a first wiring;
- a second wiring intersecting three-dimensionally with said first wiring; and
- a tunnel magnetoresistance element which is electrically insulated from said first wiring and electrically connected to said second wiring and which is formed in the region of intersection of said first wiring and said second wiring such that a tunnel insulating layer is sandwiched between ferromagnetic materials which change in resistance depending on whether the spin direction is parallel or antiparallel, thereby recording information; wherein

said magnetic memory device comprises a magnetic flux concentrator of high-permeability layer formed between said first wiring and said tunnel magnetoresistance element and adjacent the lateral sides of said tunnel magnetoresistance element, with an insulating film interposed therebetween.

10. (Previously Presented) A nonvolatile magnetic memory device of the type having:

- a first wiring;
- a second wiring intersecting three-dimensionally with said first wiring; and
- a tunnel magnetoresistance element which is electrically insulated from said first wiring and electrically connected to said second wiring and which is formed in the region of intersection of said first wiring and said second wiring such that a

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tunnel insulating layer is sandwiched between ferromagnetic materials which change in resistance depending on whether the spin direction is parallel or antiparallel, thereby recording information; wherein

said magnetic memory device comprises a first magnetic flux concentrator of high-permeability layer formed at least adjacent both of the lateral sides of said first wiring and on the side of said first wiring which is opposite to the side facing said tunnel magnetoresistance element, and a second magnetic flux concentrator of high-permeability layer formed between said first wiring and said tunnel magnetoresistance element and adjacent the lateral sides of said tunnel magnetoresistance element, with an insulating film interposed therebetween.

11. (Original) The magnetic memory device as defined in Claim 10, wherein an insulating film is formed between the first magnetic flux concentrator and the first wiring.

12. (Previously Presented) The magnetic memory device as defined in Claim 8 9, wherein at least either of the high-permeability layers formed on the lateral sides of the first wiring projects beyond the first wiring and toward the tunnel magnetoresistance element.

13. (Original) The magnetic memory device as defined in Claim 12, wherein an insulating film is formed between the first magnetic flux concentrator and the first wiring.

14. (Previously Presented) A nonvolatile magnetic memory device of the type having:

- a first wiring;
- a second wiring intersecting three-dimensionally with said first wiring; and

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a tunnel magnetoresistance element which is electrically connected to said first wiring through a switching element and is electrically connected to said second wiring and which is formed in the region of intersection of said first wiring and said second wiring such that a tunnel insulating layer is sandwiched between ferromagnetic materials which change in resistance depending on whether the spin direction is parallel or antiparallel, thereby recording information; wherein

said magnetic memory device comprises a magnetic flux concentrator of high-permeability layer formed at least on adjacent both of the lateral sides of said first wiring and adjacent the side of said first wiring which is opposite to the side facing said tunnel magnetoresistance element, with at least either of said high-permeability layer formed on the lateral sides of said first wiring projecting from said first wiring toward said tunnel magnetoresistance element, and

wherein the switching element is formed substantially co-extensive with the tunnel magnetoresistance element.

15. - 40. (Canceled)